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Giangiacomo Torri

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SHOEMAKER AND MATTARE, LTD
10 POST OFFICE ROAD - SUITE 100
SILVER SPRING, MD 20910

EXAMINER

LAU, JONATHAN S

ART UNIT

PAPER NUMBER

1623

MAIL DATE

DELIVERY MODE

12/22/2008

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/506,619	Applicant(s) TORRI ET AL.	
	Examiner Jonathan S. Lau	Art Unit 1623	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 14 Oct 2008.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1,4-8,10-13 and 15 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1,4-8,10-13 and 15 is/are rejected.
- 7) ☒ Claim(s) 15 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

This Office Action is responsive to Applicant's Amendment and Remarks, filed 14 Oct 2008, in which claims 2-3 are canceled and claims 1 and 13 are amended to change the scope and breadth of the claim.

This application is the national stage entry of PCT/EP03/02910, filed 20 Mar 2003; and claims benefit of foreign priority document EPO 02425172.0, filed 20 Mar 2002. The foreign priority document is in English.

Claims 1, 4-8, 10-13 and 15 are pending.

Rejections Withdrawn

Applicant's Amendment, filed 14 Oct 2008, with respect to claims 1-6, 10-13 and 15 rejected under 35 U.S.C. 102(b) as being anticipated by Kataoka et al. (US Patent 6,187,391, issued 13 Feb 2001, of record) as evidenced by Ward et al. (Surface Science, 1978, p257-273, of record) has been fully considered and is persuasive with regard to claims 1-6, 10, 13 and 15, as amended claim 1 requires the physical source of free radicals to be electron beam radiation; and claims 2-3 are canceled.

This rejection with regard to claims 1-6, 10, 13 and 15 has been **withdrawn**.

Applicant's Remarks, filed 14 Oct 2008, with respect to claims 1-5 and 11-13 and 15 rejected under 35 U.S.C. 102(b) as being anticipated by Zara et al. (Tappi Journal,

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1995, p131-134, of record) has been fully considered and is persuasive with regard to claims 1, 4-5, 13 and 15, as Applicant's remarks clarify the record that the limitation "absence of a radical source" in lines 6-7 of claim 1 and "absence of the radical source" in line 6 of claim 13 means the absence of the radical source in the context the presence or concentration of said radical source, not the absence of the radical source as determined by the absence of reactivity of said radical source; and claims 2-3 are canceled.

This rejection with regard to claims 1, 4-5, 13 and 15 has been **withdrawn**.

Claim Objections

Claim 15 is objected to because of the following informalities: the status of claim 15 is listed as (new) in the claims filed 14 Oct 2008, however it appears the status should be listed as (previously presented) based on the claims filed 31 Mar 2008. Appropriate correction is required.

The following are modified grounds of rejection necessitated by Applicant's Amendment, filed 14 Oct 2008, in which claims 2-3 are canceled and claims 1 and 13 are amended to change the scope and breadth of the claim.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

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(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Amended claims 11 and 12 are rejected under 35 U.S.C. 102(b) as being anticipated by Kataoka et al. (US Patent 6,187,391, issued 13 Feb 2001, cited in PTO-892) as evidenced by Ward et al. (Surface Science, 1978, p257-273, of record).

Kataoka et al. discloses a method comprising a first step of subjecting a textile fabric with a low-temperature plasma treatment to form an active seed for a graft polymerization reaction, then in a separate second step graft-polymerizing this active seed with a polymerizable monomer (abstract). Kataoka et al. discloses the textile fabric is a blend of fibers including synthetic fibers polyester; polypropylene, a polyolefin; polyamide; and natural fibers including the polysaccharides cotton or flax fibers; and silk (spanning column 3, lines 63-67 and column 4, lines 1-2), meeting limitations of instant claims 1 and 4-6. Kataoka et al. discloses the method by using low-temperature plasma treatment to generate stable active seeds, or free radicals (column 5, lines 15-25), meeting limitations of instant claims 1-3 and 13. Kataoka et al. discloses the method comprising a second step in which the surface of the textile fabric or the nonwoven fabric having the active seed as obtained in the first step is contacted with the radical-polymerizable monomer to conduct graft polymerization (column 5, lines 48-51), wherein the monomer is a functionalized olefin such as acrylic acid (column 6, lines 37-38), meeting limitations of instant claim 1 and 13. Kataoka et al. discloses the monomer added to the textile to the amount between 0.3 % by weight and 2.0% by weight (column 7, lines 18-24). For the monomer acrylic acid (MW = 72.06 g/mol), this

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is equal to 0.0075 - 0.05 mol acrylic acid / eq anhydrous glucose, or $7.3 \times 10^{-3} - 5 \times 10^{-2}$ mol olefin / eq anhydrous glucose, from the calculations:

$$1.00 \text{ g cotton} = 0.00556 \text{ mol eq anhydrous glucose}$$

$$0.003 - 0.02 \text{ g acrylic acid} = 0.000041667 - 0.0002778 \text{ mol acrylic acid}$$

$$\begin{aligned} & (0.000041667 - 0.0002778 \text{ mol acrylic acid}) / 0.00556 \text{ mol eq anhydrous glucose} \\ & = 0.0075 - 0.05 \text{ mol acrylic acid / eq anhydrous glucose} \end{aligned}$$

The range $7.3 \times 10^{-3} - 5 \times 10^{-2}$ mol olefin / eq anhydrous glucose disclosed by Kataoka et al. meets the limitations of the range in instant claims 1. The value of 5×10^{-2} mol olefin / eq anhydrous glucose disclosed by Kataoka et al. meets the limitations of the range in instant claims 12 and 15. Kataoka et al. discloses the textile made by this process, meeting the limitations of instant claims 11 and 12.

Response to Applicant's Remarks:

Applicant's Remarks, filed 14 Oct 2008, have been fully considered and found not to be persuasive.

Claims 11 and 12 are drawn to a polysaccharides produced by the method of claim 1. It is apparent from what is disclosed that the product disclosed by Kataoka et al., made by a different process, is the same as the instantly claimed product-by-process. "[E]ven though product-by-process claims are limited by and defined by the process, determination of patentability is based on the product itself. The patentability of a product does not depend on its method of production. If the product in the product-by-process claim is the same as or obvious from a product of the prior art, the claim is unpatentable even though the prior product was made by a different process." In re

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Thorpe, 777 F.2d 695, 698, 227 USPQ 964, 966 (Fed. Cir. 1985) (citations omitted) (Claim was directed to a novolac color developer. The process of making the developer was allowed. The difference between the inventive process and the prior art was the addition of metal oxide and carboxylic acid as separate ingredients instead of adding the more expensive pre-reacted metal carboxylate. The product-by-process claim was rejected because the end product, in both the prior art and the allowed process, ends up containing metal carboxylate. The fact that the metal carboxylate is not directly added, but is instead produced in-situ does not change the end product.). See MPEP 2113.

Amended claims 11 and 12 are rejected under 35 U.S.C. 102(b) as being anticipated by Zara et al. (Tappi Journal, 1995, p131-134, cited in PTO-892).

Zara et al. disclose the polysaccharide produced by the process in which the pulp cellulose fiber forms free radicals generated $\text{Fe}^{2+}/\text{H}_2\text{O}_2$, Fenton's reagent, which is followed by the addition of vinyl acetate, a functionalized olefin. See Zara et al., page 131, left column, lines 20-23 and middle column, lines 13-18 and page 134, middle column, lines 31-33 and 39-41. Zara et al. disclose the grafting of cellulose pulp used in the paper industry, wherein the cellulose pulp fibers are used together with other cellulose pulp fibers to make paper. See Zara et al., page 131, middle column, lines 3-6. Zara et al. further disclose the cellulose graft polymer produced by these methods at different amounts of monomer grafted onto the cellulose backbone as data points plotted on graphs. See, for example, Zara et al., page 132, figures 1, 2, 3, and 4. The G% along the vertical axis of the graphs in the figures is calculated by the formula on

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page 134 right column, lines 4-9, $G\% = [(M2-M1)]/M1 * 100\%$, where M2 is the mass of the graft polymer product and M1 is the mass of cellulose. A G% of 100 corresponds to a ratio mol olefin/eq anhydrous glucose of approximately 1. Data points corresponding with individual polymers with this G% value are present in figures 2, 3 and 4, anticipating the range of ratios mol olefin/eq anhydrous glucose in the instant application.

Response to Applicant's Remarks:

Applicant's Remarks, filed 14 Oct 2008, have been fully considered and found not to be persuasive.

Claims 11 and 12 are drawn to a polysaccharides produced by the method of claim 1. It is apparent from what is disclosed that the product disclosed by Zara et al., made by a different process, is the same as the instantly claimed product-by-process. "[E]ven though product-by-process claims are limited by and defined by the process, determination of patentability is based on the product itself. The patentability of a product does not depend on its method of production. If the product in the product-by-process claim is the same as or obvious from a product of the prior art, the claim is unpatentable even though the prior product was made by a different process." In re Thorpe, 777 F.2d 695, 698, 227 USPQ 964, 966 (Fed. Cir. 1985) (citations omitted) (Claim was directed to a novolac color developer. The process of making the developer was allowed. The difference between the inventive process and the prior art was the addition of metal oxide and carboxylic acid as separate ingredients instead of adding the more expensive pre-reacted metal carboxylate. The product-by-process claim was

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rejected because the end product, in both the prior art and the allowed process, ends up containing metal carboxylate. The fact that the metal carboxylate is not directly added, but is instead produced in-situ does not change the end product.). See MPEP 2113.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Amended claims 1, 4-8, 10-13 and 15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kataoka et al. (US Patent 6,187,391, issued 13 Feb 2001, cited in PTO-892) in view of Weil (US Patent 4,017,257, issued 12 Apr 1977, cited in PTO-892). Ward et al. (Surface Science, 1978, p257-273, of record) provides evidence of the inherency.

Kataoka et al. discloses as above. Karaoka et al. discloses, "The thus-obtained active seed is one which is stable for a long period of time." (column 5, lines 21-22). However, Karaoka et al. is silent as to the specific half-life of the active seed, or free radical. Ward et al. provides evidence that a stable radical generated by the use of cold plasma to generate free radical active centers within the cellulose matrix of cotton cellulose has a half-life of about 1 day, "the singlet remains even after 24 h exposure to room atmosphere, showing that the radical is long-lived." (Ward et al., page 266, lines 6-9). Therefore it is apparent from what is disclosed that the method disclosed by Karaoka et al. necessarily generates a free radical with a half-life of about 1 day, inherently meeting the limitations of instant claim 10.

Kataoka et al. does not specifically disclose the method wherein the free radical is generated by electron beam having a radiation dose between 10 and 400 kGy (instant claim 7) or wherein the radiation dose is between 20 and 200 kGy (instant claim 8).

Weil teaches functionalization of textiles by free radical grafting (column 12, lines 35-46). Weil teaches "radiation encompasses high energy protons and other particles capable of initiating free radical reactions including ... beta rays, i.e. electron beam radiation, and plasma..." (column 13, lines 36-40). Weil teaches "in the case of electron beam radiation, suitable dosages are typically in the range of 0.1-10 megarad" (column 13, lines 50-51), a dose equivalent to the range of 1 to 100 kGy.

It would have been obvious to one of ordinary skill in the art at the time of the invention to combine the method disclosed by Kataoka et al. with the teaching of Weil of

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generating free radicals using an electron beam with a dose equivalent to 100 kGy. The inventions of Kataoka et al. and Weil are all drawn to the field of functionalization of textiles by generating a free radical. It is *prima facie* obvious to one of ordinary skill in the art to substitute equivalent processes known for the same purpose to substitute the cold plasma disclosed by Kataoka et al. with an electron beam with a dose equivalent to 100 kGy taught by Weil. An express suggestion to substitute one equivalent component or process for another is not necessary to render such substitution obvious, see MPEP 2144.06 II. One of ordinary skill in the art would have a reasonable expectation of generating free radical active centers within the cellulose matrix of cotton cellulose has a half-life of about 1 day because Ward et al. provides guidance that it is the cellulose matrix of cotton cellulose that contributes to the half-life of the free radical active centers.

Response to Applicant's Remarks:

Applicant's Remarks, filed 14 Oct 2008, have been fully considered and found not to be persuasive.

Applicant notes that Kataoka et al. teaches that the hydrophobic fiber is preferable, and that the working examples in Kataoka et al. disclose the use of hydrophobic fiber polyester. However disclosed examples and preferred embodiments do not constitute a teaching away from a broader disclosure or nonpreferred embodiments, see MPEP 2123 II. The broader disclosure of Kataoka et al. teaches the method using the hydrophilic fiber cotton (column 3, lines 55-60 and column 4, lines 1-5).

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Applicant notes that the working examples in Kataoka et al. are all drawn to the method using a hydrophobic fiber. As secondary evidence of enablement, to show public possession of the method of making and/or using, Ward et al. shows public possession of the method taught in Kataoka et al. using the hydrophilic fiber cotton (abstract). Therefore it is found that Kataoka et al. contains an enabling disclosure for the nonpreferred embodiments of hydrophilic fiber such as cotton.

As recited above, Weil teaches electron beam radiation and plasma are known in the prior art as equivalent processes for generation of free radical for functionalization of textiles. An express suggestion to substitute one equivalent component or process for another is not necessary to render such substitution obvious, see MPEP 2144.06 II. Therefore the lack of explicit motivation to substitute electron beam radiation for plasmas for generation of free radical for functionalization of textiles does not rebut the *prima facie* case of obviousness in combining Kataoka et al. in view of Weil.

Conclusion

No claim is found to be allowable.

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within

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TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jonathan S. Lau whose telephone number is 571-270-3531. The examiner can normally be reached on Monday - Thursday, 9 am - 4 pm EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Shaojia Anna Jiang can be reached on 571-272-0627. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Jonathan Lau
Patent Examiner
Art Unit 1623

/Shaojia Anna Jiang/
Supervisory Patent Examiner
Art Unit 1623